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ABSTRACT

The author presents critical comments on a paper by John Siegfried, in which Siegfried reports on a controlled experiment to determine whether the educational experience of being a proctor is sufficiently valuable to justify awarding academic credit. Siegfried argues that a semester of proctoring teaches a student more than a one-semester, upper-level economics course and that credit should be given. Tietenberg disagrees. When two groups of students, comprised of proctors and students in an upper-level course, were given the College Level Examination Program (CLEP), the proctors scored highest. However, Tietenberg claims, the proctors had been exposed to an introductory course which the CLEP content focuses on, while students in upper-level courses dealt in-depth with specific areas of economics which the CLEP is not designed to measure. The educational outputs of the two types of courses are different, and it is difficult for a single instrument to adequately measure the outputs on a one-dimensional scale. In terms of costs and benefits of proctoring, Tietenberg notes that proctoring takes more of a student's time than taking an upper-level elective. His research shows self-pacing effects and workload effects from increased time requirements on Personalized System of Instruction (PSI) students. (AV)

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Is Teaching the Best Way to Learn?

Comments by

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Introduction

As I see it the role of a discussant is ro serve as a representative of the listening audience, one who has read the work in question carefully and who is prepared to assess what conclusions can validly be drawn from the study. This I will attempt to do by commenting critically on several aspects of the paper[1] and then will give my version of what I think the paper does and does not say.

Before launching into a critical review I would like to put my criticisms into perspective by acknowledging at the outset that I believe this to be a very useful addition to the literature on the use of student proctors or teaching assistants. Awarding academic credit rather than paying these proctors would be a very effective way to reduce the costs associated with teaching courses using these proctors. The question then is whether the educational experience associated with being a proctor is sufficiently "valuable" as to justify the awarding of academic credit. The Siegfried paper reports on a controlled experiment which, in principle, could answer the question.

As I shall make clear below I believe the evidence in this paper, when properly interpreted, while a very useful start in the right direction, is not sufficiently convincing to resolve the issue. Let me make clear the nature of my reservations.

The Dimensionality of a Value-Added Measure

That proctoring is something which leads to a greater mastery of the material accords well with most of our causal observations I suspect and I find the Siegfried test of that hypothesis thoroughly convincing. However, the essence of his argument is that a semester of proctoring teaches a student more than a one semester upper level economics course.

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[1] John J. Siegfried, "Is Teaching the Best Way to Learn? An Evaluation of the Benefits and Costs to Undergraduate Student Proctors in Elementary Economics," a paper delivered to the American Economic Association meetings in Atlantic City, New Jersey, September 17, 1976.

This is the basis for his conclusion that academic credit should be given and it is a much stronger hypothesis. The support for this stronger hypothesis I find weak.

The source of my reservations is the test instrument used to measure value added for both the proctoring experience and the upper level course. This exam, the CLEP is designed to test the student's basic understanding of economic concepts and principles. The building of such an understanding is a chief purpose of the introductory course and therefore it is not surprising that the proctors do well on the CLEP There is a basic compatibility between the content of the course and the questions on the CLEP

This kind of compatibility does not exist between the normal upper level elective and the CLEP . At Williams, for example, the upper level electives are specialized courses dealing intensively with a particular field within economics. While I did not have access to the Vanderbilt catalog while I was writing this, I rather suspect the same is true there as well. Thus they are not intended to sharpen general knowledge about theory, but rather to provide greater depth and experience in a particular area. As I think about some of our upper level courses -- econometrics, urban economics, law and economics -- I would not expect a CLEP type of exam to be a valid instrument for testing what is learned in those courses.

To make my point as graphically as possible had Siegfried given everyone an econometrics exam I am sure that he would have derived the conclusion that proctoring was not nearly as valuable as taking the econometrics course. My conclusion is that while the proctoring experience is clearly educationally valuable it is misleading to conclude, as Siegfried does, that it is more valuable than taking an upper level course in economics. It is correct to say that more basic concepts and principles are learned by proctoring an introductory course than by taking an upper level course; it is <u>not</u> correct to say that more is learned. The educational outputs of the two types of courses are simply different and it is difficult to think of a single test instrument which would adequately measure these outputs on a unidimensional scale. The CLEP is not such an exam.

The Treatment of External Costs

The second major criticism I have of the paper, which is equally applicable to most of the literature in the field, is the partial equilibrium nature of it. The discussion of costs and benefits is conducted as if economics were the only subject taken. This criticism is most applicable to Siegfried's discussion of the large amounts of time consumed by proctoring. Proctoring takes more time than taking an upper level elective. The question is where does this time come from - from the student's other courses? Are we creating an externality on the rest of the proctor's courses by using undergraduate tutors? I recognize that this question is more appropriate to deciding whether to have tutors or not rather than whether to give them academic credit, but I regard this logically prior question as still unresolved.

In my own published work[2] on comparing the external[3] effects of the increased time requirements on PSI students (not proctors) I identified two possible effects. The first, the self-pacing effect, allows the student to allocate this time flexibly during the semester. This should have a positive effect on other courses since the student can allocate time to those courses when time is most important. The second effect, the workload effect, reflects the fact that a PSI course simply takes more total time during the semester. To the extent that this time comes directly from study time for other courses they would suffer. The effect on other courses then is an empirical question to be resolved through an appeal to the data. My results were that PSI students did somewhat better in their other courses than the control group though the difference was not statistically significant, I concluded that for the students the external costs appear to be zero.

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[2] T. H. Tietenberg, "Teaching Intermediate Microeconomics Using the Personalized System of Instruction," Behavior Research and Technology in Higher Education (Springfield: Charles C. Thomas, Publisher, 1975), 75-89. A somewhat longer unpublished paper, "A Multi-dimensional Comparitive Analysis of the Personalized System of Instruction with the Lecture Method" containing more data and more uses of it is available from the author on request.

[3] The effects in question are external in the sense that they don't affect performance in economics but they are internal to the proctor.

In this context, however, it seems to me that the proctors, in contrast to the students, do not have the self-pacing option. The demands on their time are not self-regulated.[4] Thus it is an open question whether there are costs imposed on the rest of the student's educational experience when employed as a proctor. I would hope that John and others would explore this question. My own sample sizes are so small as to prohibit me from coming to any conclusions.

[4]Note that my view that the burden of the time requirement is greater when the student cannot control its allocation is in part corroborated by the interview evidence introduced by Siegfried. This evidence suggests that when proctor availability requirements were regularized by fixed office hours proctor complaints went down.